

REMARKS

Claims 46-50, 52-54, 56-66, and 68-118 are pending and at issue.

The office action confirms that claims 67, 74 – 77, and 81 – 105 recite allowable subject matter.

The office action rejects the reissue oath/declaration as defective.

The office action rejects various claims under 35 U.S.C. § 112, ¶1.

The office action rejects claims 46 – 66, 68 – 73, and 78 – 80 under 35 U.S.C. § 103.

Applicant respectfully traverses each of the rejections and requests their removal.

I. Status of Claims

Claims 46-118 remain pending and at issue.

The status of the claims is as follows:

Cancelled: Claims 1-45, 51, 55, and 67;

Currently added: Claims 106-118;

Amended: Claims 58, 60, 62, 63, 64, 68-71, 73, 84, 85, 89, 90, 94, 95, 99, 104, and 105;

Twice Amended: Claims 53, 54, 57, 59, 61, 65, 66, 72, and 100;

Thrice Amended: Claims 50, 52, 76, 77, 81, 86, 91, 96, and 101;

Four Times Amended: Claims 46, 47, 48, 49, and 56;

Five Times Amended: Claims 79 and 80; and

Previously Added: Claims 82, 83, 87, 88, 90, 92, 93, 97, 98, 102, and 103.

II. Reissue Oath/Declaration

The office action rejects the current reissue oath/declaration as defective for not identifying the error corrections currently sought in the application. Applicant will provide a supplemental reissue oath/declaration upon confirmation of the allowability of the pending claims.

III. Rejections under 35 U.S.C. § 112, ¶1

Claims 46-78, 80, and 81-105 stand rejected under 35 U.S.C. § 112, ¶1, as not complying with the enablement requirement. The claims are rejected because, per the office action, there is no disclosure of the entire genus of “non-biological material” or “opaque non-biological material,” but instead only a few enabled examples. Claim 53 is separately rejected because, per the office action, there is no disclosure of the genus of materials with two layers and laser induced breakdown substantially affecting one layer and not the other. Claims 81, 86, 91, and 96 also stand separately rejected because there is purportedly no embodiment in the disclosure with beam scanning. Applicant respectfully traverses these rejections.

Applicant continues to maintain that the previously-claimed subject matter was enabled. Applicant has sufficiently explained how to determine the condition (such as satisfactory pulse width durations) at which laser induced breakdown will occur in a material and how to create such breakdown. Applicant has described how to test both non-organic and organic materials and develop “a characteristic curve of fluence breakdown threshold F_{TH} as a function of laser pulse width specific to a material” (*see*, RE37,585 F1, col. 4, l. 66 – col. 5, l. 7) for determining the laser induced breakdown threshold. Applicant applies this technique to various examples in the specification, including biological examples and non-biological examples. The examiner has offered no basis for rationalizing that the techniques described will not identify applicable materials and conditions for laser induced breakdown. Applicant therefore wholly incorporates its previous responses to the examiner’s rejections under 35 U.S.C. § 112.

Nevertheless, to expedite allowance, applicant has amended the claims to remove the reference to non-biological material and replace that term with reference to “an opaque or a transparent material.” Specifically, independent claims 46, 47, 48, 49, 50, 80, 81, 86, 91, 96, and 101 have been amended. Both the terms opaque material and transparent material were discussed in the original application as filed, where example techniques were applied to both classes of materials. See, e.g., col. 5, l. 10 – col. 6, l. 67, *discussing specifically “opaque materials”*; col. 7, l. 2 – col. 8, l. 6, *discussing examples of transparent materials*; and col. 10, ll. 21-60, *discussing “opaque and transparent materials” and common characteristics in their threshold fluence curves to identify materials amendable to LIB*.

Applicant respectfully, but strongly asserts that the amendments obviate the rejections under 35 U.S.C. § 112.

In addition to amending these certain claims to recite “an opaque or a transparent material,” applicant has added claims 107-118 to further recite that this opaque or transparent material is a metal, as provided by examples in the application. These claims provide further distinction as well.

For any of these materials, applicant has sufficiently described possession of the invention and its enablement. To this point, the examiner’s attention is directed to applicant’s previous response demonstrating the inapplicability of *In re Curtis*, establishing that the application fully describes techniques for determining a laser induced breakdown threshold of any suitable material, and noting that the examiner provides no basis for concluding that the discussed techniques could not be used to determine laser induced breakdown threshold in any of the recited materials.

With respect to the specific rejection of claims 81, 86, 91 and 96, the application describes methods in which a beam is scanned at or beneath the surface of a material. The abstract specifically references methods in which a “beam is focused to a point at or beneath the surface of a material.” The next two sentences of the abstract state that this beam “may be moved in the x, y, and z directions to produce desired features.” One of ordinary skill in the art would readily understand such descriptions as pertaining to “scanning” a laser beam “at or beneath the surface of a material.” Merely by way of example, movement in the xy-plane can be used to scan a laser beam, while movement in the z direction can be used to control the depth beneath the surface of that scanning. The written description goes on to provide some

specific examples of the same. *See e.g.*, FIG. 1, the transparent material example of col. 7, and the discussion of an axis movement at column 11. Yet other examples would be known to persons skilled in the art upon reading the application.

The specific rejection of claim 53 is traversed for similar reasons, namely that the office action provides no *prima facie* rationale for concluding that the enabled examples (e.g., materials in which there is beneath the surface LIB or ablation) would not extend to other examples. The subsurface laser induced breakdown discussed regarding claims 81, 86, 91, and 96 provides sufficient examples to overcome the rejection of claim 53. The unaffected region of a material adjacent its surface, and outside the Rayleigh range threshold for LIB, may be consider a first layer, while the affected region therebelow may be considered a second layer. Yet, beyond this example, the specification expressly describes the ability to have LIB substantially affect one layer but not another. Namely, the mask and target example of FIGS. 6A and 6B describe and illustrate two layers (e.g., a mask on top of a target), in which only one (e.g., the target) is to be affected by an incident light beam:

The use of a mask is illustrated in FIG. 6A and B. The basic method consists of placing a mask in the beam path or on the target itself. If it is desired to block a portion of the beam, the mask should be made of an opaque material and be suspended in the beam path (FIG. 6A) alternatively, the mask may be placed on the target and be absorptive so as to contour the target to the shape of the mask (FIG. 6B).

In light of the foregoing, the § 112, ¶1 rejections are traversed.

IV. Rejections under 35 U.S.C. § 103

The examiner has indicated that dependent claim 67 recites allowable subject matter. By amendment above, those independent claims rejected on prior art grounds (namely claims 46, 47, 48, 49, 50, 78, 79, and 80) have been amended to recite (generally speaking) the recitations of claim 67:

scanning the beam along a predetermined path beneath the surface of the opaque or transparent material to induce laser induced breakdown therein to a depth smaller than the Rayleigh range.

Applicant respectfully submits that all obviousness rejections are thus traversed.

V. Conclusion

In light of the foregoing, applicant respectfully asserts that claims 46-50, 52-54, 56-66, and 68-118 are in condition for immediate allowance. Confirmation of the same is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, he is urged to telephone the undersigned at the indicated number.

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Respectfully submitted,

By 

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